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THE FARM MANAGEMENT MONTHLY.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF PLANT INDUSTRY,

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FARM PRACTICE IN CONTROLLING CRAWFISH DAMAGE.

In many sections of the black prairie belt of Alabama and Mississippi there are times when crawfish, or crayfish, do a considerable amount of damage to early spring planted crops, especially corn, cotton, and alfalfa. A simple method of farm practice followed by a Mississippi farmer has proven very effective in controlling these pests and is worthy of an extended trial throughout the entire belt.

This man observed that the damage by crawfish is usually less on land that has been in cultivated crops for several years than on land that is broken up and cultivated after having been in meadow or pasture or lying out for a number of years. The reason for this is obvious. Crawfish do their greatest damage from early spring to the middle of June and as they destroy only the young and tender plants their food supply is materially decreased in cultivated fields after the plants have reached a certain stage of development.

These facts led this farmer to conclude that by adopting a cropping system involving the use of a late planted crop which permitted breaking the land early in the winter and then summer fallowing, that is, disking and harrowing frequently until the latter part of June, he could starve out and otherwise destroy most of the crawfish before the crop was planted. As an experiment he took a piece of badly infested land that had been in pasture for a number of years and worked it as above described. The result was very satisfactory, and by repeating the work on the same land the following year the crawfish were practically eliminated.

This method will not be practicable where cotton is to be planted continuously, but it lends itself readily to a cropping system involving the use of cotton one year in four. A good rotation for such conditions would be

1st year - Land plowed in late winter and kept free of all plant growth till June, when corn is planted; cowpeas sown in corn at last cultivation.
2nd year - Cotton, followed by oats in the fall, and melilotus sown on oats in March.
3rd year - Oats for grain. Melilotus for hay after the oats are harvested.
4th year - Melilotus for seed.

As carbon bisulphide placed in the crawfish burrows and the holes closed by pressure of the foot kills many of the pests, it may be advisable to use this should any crawfish escape the cultural treatment and appear after the corn or cotton is planted. By combining these two methods the farmer should be able to effectively control the crawfish on his land. The principal thing is to keep

the harrows going so as to destroy all plant growth on the land from early spring to corn planting time. This repeated harrowing will also kill numbers of the crawfish that are caught away from their burrows in search of food. - M. A. Crosby.

THE YOUNG FARMER'S NEED OF A YEARLY BUSINESS INVENTORY.

The young farmer who is endeavoring to build up a more efficient and profitable business seldom retains much cash. When money is received he buys a new implement, another animal, improves a building, or makes payments on bills for things bought on credit. During the course of the year he may receive and pay out large sums of money, leaving almost no cash at the end of the year. The annual returns may seem to have been only a fair living for himself and family, whereas the farm business may have turned a good profit, which was invested from month to month. Hence it is important for the farmer's guidance and encouragement that he make an annual inventory of his farm investments. This inventory should be a detailed list, with values, of everything used in the farm business, including land, buildings, livestock, machinery and tools, produce for feed or sale, supplies, bills receivable, and cash; also a list of all accounts and bills owing. The difference between the total assets and debts shows the net farm worth.

A study of two successive inventories of a farm in New York State illustrates how one young farmer on 100 acres prospered regardless of the fact that he had almost no cash at the end of the year. The total assets at the beginning of the year amounted to $13,090 and to $13,400 at the end of the same year, an increase of $310. The increased investment in live stock, machinery and tools, and more produce held for sale amounted to $1,073, but this was partially offset by the cash decrease of $763. The farm indebtedness was also reduced by $253, thus making a total increase in net worth to the farm business of $563. The inventory values covered all depreciations and increases in values, so that this $563 was net increase in the value of the farm investment. It means that this sum was saved from the year's business after all farm expenses had been paid, including interest on borrowed money and all living expenses. The amount of cash at the end of the year, $133, proved to be no indication of the success of the year's business. - C. M. Bennett.

SOME IMPORTANT FACTS RELATIVE TO THE MANAGEMENT OF LIVESTOCK IN THE BLUEGRASS REGION OF KENTUCKY.

In many counties of the bluegrass region of Kentucky the principal stock enterprises are steers, hogs, and sheep. In Madison County, Ky., an average of 50 steers, 75 hogs, and 25 lambs per farm were sold during the year from about 60 farms averaging 400 acres each. In this region steers remain on the farm about a year. They are "roughed through" the winter and are fattened on the blue grass pastures in the summer and sold in the fall. Pigs are farrowed in April and September and marketed in June, October, and November. The fall pigs follow steers during the winter with additional rations of about 143 pounds of grain per hog. They pasture on clover and rye in the spring with about 312 pounds of grain per hog for about sixty days before marketing. The spring pigs marketed in the fall are pastured during the spring and summer with additional rations, and for about thirty to sixty days before marketing are fed full rations of new corn. These summer hogs get in all about 650 pounds of grain. In addition to the grain ration given, the hogs pasture on green rye and clover and in a few cases field peas. Also some mature rye and wheat are hogged down.

On some farms sheep are on pasture practically the year round, but as a rule are fed on dry rations for a short period in the winter. Winter grains begin to furnish pasture about March 1. The sheep pasture on this until about the middle of April, when they may begin on the blue grass.

The labor requirements of these animals as determined by the enterprise survey are as follows: steers, each 1 man hour, 10 horse hours; hogs, each, 3 man hours, ½ horse hour; ewes with lambs, 2 man hours, ¼ horse hour.

On this type of farm it is estimated that an average of about 1.5 work units per year is required for each animal unit. This is about equal to the work units required on an acre of wheat in the same region. It must be taken into consideration, however, that much of the work done on the average farm on live stock is performed as "chores" in the morning and evening; but this practice is not as common on the larger farms in Kentucky as it is in the States farther north. - J. H. Arnold.

COST OF BUILDING A ROD OF FENCE IN NORTH DAKOTA.

The cost of building fence on the ordinary farm in North Dakota is relatively high, as all materials, including posts, must be imported. Where costs are naturally high there is a corresponding need of economy. The figures given in the following table are averages secured from investigational work on many North Dakota farms.

Distance between posts	No. of barbed wires	Cost per rod
1 rod	2	$0.322
1 rod	3	0.369
1½ rods	3	0.290
1½ rods	4	0.335
2 rods	3	0.254
2 rods	4	0.297
2½ rods	3	0.230
2½ rods	4	0.274
3 rods	3	0.215
3 rods	4	0.257
3 rods	5	0.300

This table shows cost of construction and includes all expenses for material and labor. No data is available at present to show relative depreciation and cost of upkeep, but wire undoubtedly lasts much longer than ordinary posts. These items are important, and an attempt will be made to secure this in formation.

It will be observed that it costs less to use four wires with posts two rods apart than to use two wires with posts one rod apart. In fact, the entire table shows the low cost of wire as compared with posts. The question as to which type is best must be determined largely by the use to be made of the fence.
C. M. Hennis.

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SO-CALLED 'ABANDONED FARMS' IN THE NORTH ATLANTIC STATES.

Although many a set of farm buildings in the North Atlantic States is now unoccupied and rapidly going to pieces, it should not be assumed that the farm itself is abandoned. To be sure, it is no longer a separate farm or the home of a farm family; but the land is still devoted to farm uses, and that, too, with better economy than would be the case if it were operated as a separate farm. Until the last few decades a farm family could live comfortably on a moderate sized farm with a very small amount of crop land, raising most of their food and even a considerable part of the raw material for their clothing, as well as a few products to sell.

On the other hand, a farm must at present sell a much larger amount of raw materials, with the income from which the needs of the farm family must be supplied by purchase. The larger farms with more crop acres, and perhaps more productive ones, are the farms which can now survive. Title to the land of these so-called abandoned farms is rarely, if ever, released. Instead, the land is sold, leased, or rented to some neighboring farmer by whom it can be used to best advantage. The vacating of farmsteads in the North Atlantic States is due to a change in economic conditions which has rendered the situation untenable rather than to mistaken methods when the region was originally settled.

Two or three or more farms of this character would often make one good farm if they were contiguous and could be bought by one owner. Such places are very frequently of rather small acreage, that is, from thirty to one hundred acres, and often there is not a sufficient number of them in adjoining tracts to be desirable for purchase as a single farm. There are few regions in some parts of northern New England and in south central New York where several farms of this kind can be bought in one tract and operated as one farm. Since the greater part of the land is suitable principally for grazing or woodland, with a limited amount of tillage, it is usually of relatively low producing capacity and must be used for some extensive type of farming even though the returns per acre are small. Four or five hundred acres or more, however, will usually be enough to support a farm family. Experience has shown that some land of this character can be utilized profitably for sheep raising.

There is one suitable use for the small farm which has been vacated; it may often make an inexpensive country home for a city family. For this purpose only those farms will be chosen which have some pleasant outlook, buildings still reasonably intact, land close by for a garden, and a good well or spring. - L. G. Dodge.

THE SMALL FARM.

Small farms devoted to general farming rarely, if ever, give an adequate living to the operator. In order to be profitable the small farm must be devoted to some intensive type of agriculture, such as truck, poultry, fruit, intensive dairying, etc. To be successful in any of these lines the farmer must be an unusual man on account of the complexity of the business not only in growing the crops and caring for the animals but also in conducting the business side of the farm. Further, if the farm is devoted to perishable products there must be an important advantage in location with reference to markets. The production of perishable products far from market is attended not only with heavy freight and commission charges but is subject to disastrous fluctuation in prices between the time of shipping the commodity and the time of its actual sale on the market.

Intensive crops are normally subject to far greater fluctuations in price than are the staples. Taking the country as a whole, vegetables, including potatoes, occupy only 2¼ per cent of the crop area and fruit only 1¾ per cent. Under present conditions this is about all of these crops which can find a market at remunerative prices. On account of the small area involved it is very easy to increase production far beyond demand; in fact, this often happens with results disastrous to specialized, intensive farming. The field for the profitable small farm is, therefore, a very limited one.

The attempt to establish intensive types of farming in regions where markets are lacking, or on a scale inconsistent with market facilities, has led to serious mistakes. Such mistakes resulting from any great extension of truck growing soon become apparent and are soon corrected; but it takes longer to realize a mistake in fruit growing and therefore longer to correct it. - W. J. Spillman.

WASTE OF TIME OF HORSES.

There were 435,000 mature horses and mules in Arkansas at the last Census, yet with proper crop systems 300,000 work animals would have produced as much agricultural wealth. The acreage of crops per horse for the entire State was about 12½, whereas, with the lesser number of work animals it would have been 18 and a fraction -- a very moderate acreage per horse under a good crop system.

It appears, therefore, that Arkansas farmers boarded 135,000 work animals for nothing, and as it costs about $100 per year to keep such an animal there was a loss of thirteen and a half million dollars to the State in one year of feeding, caring for, and having money invested in these unnecessary work animals.

Investigations that are not quite complete indicate that on a group of nearly sixty farms from which records have been obtained there were not more than 100 days of productive work per horse in the year 1914, and it will possibly fall below this. It is apparent that this waste of time on the part of the teams is one of the largest losses that farmers suffer. The remedy is plain enough -- diversification, with proper size of farm, in such manner or with such crops as will keep teams reasonably busy the year round. - A. D. McNair.

PRODUCING HOME SUPPLIES.

A number of years ago a North Dakota wheat farmer, whose exclusive grain growing had put him deep in debt, desired from his bank a loan of a thousand dollars. Except the horses there was no livestock--not a cow, a pig, or even a chicken--on the place. The banker, a very shrewd business man, was able to analyze the problem and to discover the cause of the farmer's financial difficulties, and he agreed to make the loan only on condition that the borrower change his system of farming.

The system outlined by the banker required that a portion of the loan should be used to purchase two cows, half a dozen pigs, and a small flock of poultry. It also provided for a fair sized vegetable garden. Grain farming was to be continued as before. The banker figured that the livestock and the garden would, in poor as well as in good seasons, fully support the farmer's table. He figured that in poor years the farmer would be able to play even, and that in the good, and even in the average, year the farm would produce enough to gradually wipe out the debt.

The farmer reluctantly agreed to the banker's terms, received the loan, and met the conditions. In five years he was out of debt and rated as a substantial and prosperous farmer and business man. To him farming had ceased to be a game of chance and had become a business. - J. C. McDowell.

WHY EFFICIENCY IN FARMING IS MEASURED BY LABOR INCOME INSTEAD OF IN PERCENTAGE OF THE INVESTMENT.

The term "labor income", so widely used as a measure of efficiency in farming, is very confusing to those who are in the habit of estimating profits in percentage of capital invested. The following illustration will make clear the relation between the two methods.

On a particular Indiana farm the capital invested was $20,716. The gross receipts for the year were $2,163 and the expenses were $878, leaving a net farm income of $1,285. Now this $1,285 represents what the farmer got for his labor and the use of his capital.

In most industrial enterprises every one, including the head of the enterprise, receives a definite salary, and this salary is fixed by the law of supply and demand; hence net income is all credited to capital and is expressed in percentage of his capital. But the farmer has no fixed salary. The question arises, therefore, what proportion of the $1,285 shall be credited to the farmer's labor and what proportion to the capital invested. There are clearly two ways of answering this question. One would be to estimate a fair wage for the farmer, say $325 for the year, and credit the remaining $960 to capital. The percent of profit would then be found by dividing the $960 by one percent of the investment of $20,716, which gives 4.6%. This is the usual method of expressing profit in industrial enterprises where every employee, including the head of the firm, receives a wage or salary.

The difficulty in applying this method in farming lies in determining what is the value of the farmer's services. This difficulty has been met by assuming that his time is worth what he can make the business earn over and above a fair rate of interest on the investment. If this rate is 5%, then $1,035 of the net income of $1,285 represents interest and the remainder, or $249, represents the farmer's labor income. Labor income is thus simply what the business earns over and above a fair rate of interest on the investment. - D. A. Brodie.

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IMPORTANT POINTS TO CONSIDER WHEN STARTING FARMING IN A STRANGE REGION.

The man who takes up a farm business in a community with which he is not familiar is likely to fall into error on matters seemingly very simple to the residents of the region. The new man often follows the planting dates of the region from which he came, and thus the crops may be injured by early or late frosts or other climatic conditions especially prevalent in the region.

In southern New England such a case was observed the past year. A farmer new to the region, not realizing the shortness of the growing season, had planted his corn too late to mature properly, with the result that but fifteen bushels were husked from nine acres and a large part of his fodder was lost by heating. This individual is there to make the farm a paying proposition, and as fast as possible is correcting his errors.

Accurate climatic data are often of great value to a farmer starting out in a strange neighborhood. Tables showing the dates of the last killing frosts in the spring and the first in the fall, together with rainfall by months and total rainfall for the region, are usually available from the United States Weather Bureau, Washington, D. C. These should be consulted before deciding on the crop practice for the new locality. It would be still better to obtain such information before deciding upon a locality in which to purchase a farm.

Another mistake which is often made is through the endeavor to bring the type of farming of the old region to the new location, where, in the majority of cases, not only different conditions of soil and topography prevail, but new problems relative to transportation and market demands are met. These new conditions determine the profitableness or unprofitableness of the type for the region. The general type of soils of the neighborhood should be studied and compared with the soils of the individual farm and crops planted which are best adapted to soil and topography of the farm as shown by the general farm practice of the neighborhood. As a general rule, it is the safest practice for any farmer starting out in a new location to grow largely the same crops and keep the same breed of livestock as his neighbors, unless there is an especially good reason for following another practice. As one grows familiar with the region, experience may suggest improved methods.

If farmers, when changing to a region with which they are not familiar, would give more thought to climatic and soil requirements as shown by the type of farming and planting dates generally practised in the new neighborhood, many hardships and dissapointments would be prevented. - L. G. Howell.

THE COST OF SETTING AND MAINTAINING AN ACRE OF HOPS IN ONEIDA COUNTY, NEW YORK.

When figuring the cost of raising hops there are several items of expense which the grower usually fails to consider at all. Among these items a very important one is the annual charge for starting and maintaining the yard. A yard does not come into bearing until one year from the time it is planted. Hence the total cost of setting the yard and caring for it the first year, divided by the number of years the yard is run, constitutes the annual charge for starting the yard. As a usual thing the yard is gone over each year and hills that have died out are set in. Thus to the annual charge for growing the yard there should be added the value of sets used to replace the missing hills, together with that of the labor of setting them in, in order to arrive at the annual charge for the maintenance of the yard.

The labor operations involved in starting a yard are as follows: the general preparation of the ground as for any other planted crop; marking or staking out the field to determine the location of the hills; cutting and planting the roots; cultivating, hoeing, and fertilizing, similar to that for other planted crops; and drawing the poles on the yard, either in the fall of the first year or the following spring. In addition to the labor there should be a charge for the roots and fertilizer used, the use of the ground, and also an interest charge for the money invested the first year before there is any return from the crop. Since a yard is usually set with an inter-tilled crop, such as corn or potatoes, only a portion of the ground is devoted to the hops. This is usually about one fourth. Hence only one fourth the cost of fitting, cultivating, and fertilizing and one fourth the charge for the use of the land should be charged against the new yard.

Computed after this method, survey figures from 189 acres of hops on fourteen farms in the vicinity of Waterville, Oneida County, New York, show that the average annual cost for setting and maintaining the stand and one acre of hops in that vicinity is $5.87. The initial cost of setting and caring for one acre of hops the first year is $34.11. Adding $1.71, five per cent interest, makes the total cost $35.82. The average life of a yard in this vicinity was found to be nine years. Hence the annual charge for bringing the acre up to the spring of the second year is $3.98. The average value of sets used is $1.62 and the labor of setting them in $0.27 per acre. These costs, added to $3.98, make $5.87, the total annual charge to cover the cost of starting and maintaining one acre of hops. With average yields this one charge of merely starting a yard and keeping the hills filled in, usually ignored, amounts to about one cent per pound. - F. H. Branch.

THE SMALL TRACTOR IN FARM PRACTICE.

To attempt to define the status of a machine which is undergoing so rapid a process of development as the farm tractor is difficult, as its status changes with each improvement or modification. Eighteen months ago the farm tractor was a comparatively large and expensive outfit and might truthfully have been said to have no place in the operation of the medium sized farm of the general type. Now, however, the type of tractor most prominent and apparently most in demand by the farmer is a small, low-priced outfit, capable of pulling from two to four plow bottoms, and with belt capacity sufficient to operate any of the machines commonly used on the average farm.

These small tractors are of simpler construction than the large ones. Most of them have only one drive wheel and usually only one speed forward and one reverse, thus eliminating considerable gearing, including the differential gears. At the same time they permit the hitching of a two-bottom gang plow directly behind the center of draft of the machine, something which was impossible to accomplish with a wide tractor having two drive wheels without causing side draft or running the tractor partly on the plowed land.

The mechanical features are not so important from the farmer's viewpoint, however, as its low price. The average farm already has as large an investment per acre for power as conditions will justify, and the purchase of a tractor which would not displace its money equivalent in other power would be unwise. As a tractor's working life in years is usually only about half that of a horse, it is evident that it should displace practically double its value in horses, if it displaces no other source of power. As a rule, however, the small tractor will take the place of a stationary engine for operating the various farm machines, and the difference in the cost of such a stationary engine and a small tractor is slight; so it will not always have to displace horses to any great extent to justify its purchase.

Judging by data already obtained in a study of the small, low priced farm tractor, it is safe to predict that it will soon command, on the ground of economy, a permanent place on the average farm. The degree of success which will be attained with a tractor depends very largely on its operation and the general management of the farm work so as to utilize it to the greatest advantage. Like every machine, its value is increased by being worn out as rapidly as possible in profitable work, as the interest charges are thereby reduced, and depreciation, through rust, etc., reduced to a minimum. The work of the farm should, therefore, be planned so as to use the tractor wherever practicable and to dis-

pense with as many horses as possible. As the tractor will be capable of doing practically all the plowing on the average farm, the number of horses which must be kept will depend upon the amount of cultivation, etc., to be done, for which the tractor is not adapted. Where the tractor is used the cropping system should be planned to reduce this kind of work to a minimum. - A. P. Yerkes.

A TWO-FOLD USE FOR THE MANURE SPREADER.

Some of the implements which are found on almost every farm are used for very short periods each year. The length of service may not include more than three or four weeks. For the remaining part of the year such pieces either remain in the open, or they may be given the best of care in a first class implement shed. Where they are exposed to the weather a rapid decline in value is the result. Investigations have proven that the depreciation for the manure spreader is approximately 11.67 per cent annually. Owing to the fact that this machine is required to carry a by-product which contains more or less moisture, a part of the depreciation is undoubtedly due to the decay of the wood in the framework. If this and similar pieces could be utilized to a greater extent they should last almost as long, and in doing the additional work the yearly charge in connection with operation could be met more fully or completely. Ordinarily the manure spreader is in use at seasons of the year when the field work is not demanding attention. While the harvest is in progress it will be found idle; hence, it is available for other work.

In districts where field roots such as mangolds, sugar beets, or turnips are grown, the manure spreader may serve as a wagon in transferring the crop from the field to the root cellar or pit. A simple adjustment will enable the operator to save considerable time, as well as the task of unloading with the aid of a shovel. The cylinder or spreader is first removed from the end of the box and a suitable end board is set in place, the latter being held by an iron bar or rod. When the load is taken to the cellar, the end board can be lifted out readily and the roots may be rolled into the trap door merely by putting on the crank which connects with the apron shaft and turning by hand until the entire lot has been discharged. It requires only a few moments to deliver the load. If the farmer does not have wagons enough to move the crop rapidly, this difficulty may be overcome by following the suggestion which has been offered. - L. A Moorhouse.

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EFFICIENT OPERATION ESSENTIAL TO SUCCESS WITH TRACTOR.

The history of the use of the farm tractor clearly shows that an efficient operator is essential if the outfit is to prove a profitable investment. Data collected show that inefficient operation more than any other one thing has been the cause of failures with gas tractors, being directly responsible for 21.9% of all failures, while it also has considerable influence over other factors, such as heavy operating expenses, short life of the machine, etc., which are frequently assigned as the cause of tractor failures.

It is often stated that any boy can run a tractor, as its operation is extremely simple. But it is simple only in the way many things, which to the average individual seem exceeding complex, are simple; that is, it is simple to one who understands it thoroughly. It is an easy matter to learn how to start the motor, how to change gears, operate the clutch, and steer the outfit; but the ability to do all these things well by no means qualifies a man as an efficient operator. They are of much less importance than the ability to detect loose bearings and properly tighten them, to keep the carburetor adjusted correctly, to maintain the ignition system in first class condition, and many other things which are necessary to keep the motor operating efficiently.

The necessity of having the motor operated with a high degree of efficiency, both mechanical and thermal, is readily apparent when it is remembered that a large percentage of the motor's power is required to move the tractor's own weight, and any loss of efficiency is, therefore, especially noticeable on the drawbar, besides adding to the cost of performing the work.

Any man of ordinary intelligence can operate a tractor efficiently, but only after study and experience. To attempt to gain such experience by experimenting with an expensive tractor is apt to prove disastrous, as is attested by numerous instances. While some men, with no previous training, have become fairly efficient operators through experience with their own outfit, without incurring heavy repair bills, such cases are exceptions and not the rule. It will usually be cheaper and more satisfactory to take a course of instruction under a competent instructor, either at some good automobile or tractor school, or at some of the agricultural or technical colleges. The time and money saved in operating the tractor the first season will often more than repay the cost of such instruction.

It is sometimes pointed out that the average individual has little difficulty in operating an automobile successfully without special instruction, but there is a great dissimilarity in the two cases. The automobile is primarily a pleasure vehicle and expenses are not of vital interest; it is equipped with a motor with an immense amount of reserve power and need not, therefore, be maintained at high efficiency to give satisfactory service, while delays for repairs result mainly in inconvenience. Furthermore, to enable

the average autoist to attain the degree of success which he enjoys there is maintained an enormous number of repair shops, manned by skilled mechanics, who are everywhere available to make neccessary adjustments and repairs. On the other hand, the tractor is used for productive work wherein delays are expensive both on account of their effect on the crop and the enforced idleness of hired help, and it is highly desirable that most repairs be made by the owner, partly to save time and partly to keep down the operating expenses by avoiding employment of high-priced repair men. From an economic standpoint the owners of tractors cannot afford to maintain an expensive repair corps, and to become capable of making the repairs personally requires some study and instruction.

The warning contained herein is not given for the purpose of discouraging a farmer from attempting to operate tractors, but with a view to insuring a higher degree of success through their use. The necessary training is easily obtained, and at slight expense. The gasoline engine is still a comparatively new thing to many farmers, but one generation of well trained and competent operators will disseminate information concerning it so that future generations will acquire knowledge on the subject as unconsciously, yet as thoroughly, as the average farmer's son acquires the knowledge of horses. - A. P. Yerkes.

HOLDING LIVESTOCK ON NORTHERN FARMS.

At the present time the farmers of the Northern States are again facing the perplexing problem whether they shall dispose of practically all of their livestock or stay in the business as they have done in the past.

The high price of corn and the low price of livestock, especially hogs, have influenced a large number of farmers throughout the corn belt to sacrifice most of their animals and put them on the market in poor condition. This rapid marketing and the inferior quality of the stock have further lowered prices and temporarily made conditions decidedly unsatisfactory.

Such a state of affairs as we find at present has arisen many times in the past and no doubt will occur again. The conservative farmer, who has avoided overstocking his farm while prices were high, generally keeps a good share of his livestock when such conditions arise and foregoes the temptation to sell his corn at the high cash price which it will bring. In a short time afterward he usually finds that the price of livestock has come back to a normal basis, and he is thus repaid for retaining his stock animals even on high priced corn.

It is safe to predict that this relative difference between the market price of corn and livestock will be gradually wiped out. Farmers in general, therefore, are advised not to sacrifice their livestock unduly. - J. A. Drake.

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OFFICE OF FARM MANAGEMENT

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VALUE OF A WOMAN'S WORK IN THE FARM HOME.

The woman plays an important part in the successful operation of many farms. Frequently, however, the extent of her work is not appreciated, and in many cases little attention is given to improvements in the house because the labor thus saved, in its relation to the general farm operations, is not deemed commensurate with the money expended.

To illustrate the value of such work performed by some women a record is here given from a 320-acre farm in North Dakota. The size of the family on this farm averaged seven adults during the year. Four of these were hired men, the other three being the farmer, his wife, and a grown daughter. The wife and daughter did all the housework, all the laundry work, and cared for an eight-room house. They canned 300 quarts of fruit and 100 quarts of vegetables and did most of the work in the vegetable garden. Practically all the vegetables consumed were produced on the farm. Among the important articles of food they prepared for home consumption during the year were 50 bushels of potatoes, 3 bushels of green beans, 4 bushels of green peas, 3 bushels of onions, 400 head of cabbage, 10 bushels of turnips, 6 bushels of beets, 3 bushels of cucumbers, 6 bushels of tomatoes, 36 head of cauliflower, 7 bushels of sweet corn, 1900 pounds of flour, 144 pounds of coffee, 1800 pounds of dressed pork, 200 head of poultry, 520 dozens of eggs, and 312 pounds of butter.

This farmer's wife valued her own and her daughter's labor at $520 per year. The estimate is probably too high, but $200 of it may safely be charged to the farm as representing the value of the labor required in caring for the four hired men above the normal labor required in caring for the farmer's family. This $200 is a direct contribution to the business of the farm. On many farms the labor contribution of the farmer's wife or daughter is the limiting factor between success or failure. - W. C. Funk.

WEEDS.

It has been shown in experiments with corn made by this Department that weed eradication is the principal if not the only beneficial result of cultivating this crop after planting. This means that in cultivating the corn crop the implements used should be designed primarily for accomplishing the destruction of weeds in the easiest and cheapest manner. It seems to indicate further that as weed control becomes more thorough intercultural tillage of growing crops may be accordingly decreased.

Far more important than to kill weeds is to avoid having weeds to kill. In other words, the farmer should aim to prevent rather than to cure the evil. A farm may be made almost free of

weeds by strictly observing the following three principles: (1) prevent weeds from going to seed on the farm; (2) prevent weed seeds being brought to the farm; and (3) in case of perennial weeds, prevent them from making top growth, which will finally starve out the underground parts.

Equally as important as these three principles, however, is the man behind them. Many men make a start to clear their farm of weeds but quit too soon. Often the campaign is stopped when success is in sight, and the weeds soon recover. Clearing a farm of weeds, especially perennials, is no easy task; it requires more than average intelligence and perseverance. If however, one decides on a systematic plan of attack based on these three principles, and sees this plan faithfully through to a finish, he can practically rid his farm of weeds, and this without a great amount of labor and expense. - H. R. Cox.

THE USE OF THE CHECK BOOK AS AN AID IN KEEPING FARM ACCOUNTS.

Farmers who do most of their business by check can with little effort keep a very satisfactory account of the total farm receipts and expenses. Two things are essential for the success of this method.

First, all money received from any source, whether in cash or by check, should be deposited in the bank. By doing this the record of deposits will give the entire farm income. Most important of all it insures against any moneys being spent without a check or stub to show for it.

Second, when drawing checks, care should be used to state for what purpose drawn. In this way the check stub will give an itemized account of the farm expenditures.

Under this system checks for money for personal use are drawn in the same way as for any other purpose. At times the purchase of minor articles for farm use will require cash when the amount is so small that it is not desirable to use a check; therefore to have an exact record a memorandum of the farm items which are paid out of the money checked out for personal use is needed. That is, these items should be charged to the farm, but they are really paid out of the pocket money which is charged on the check book to the personal account.

A memorandum of produce exchanged for groceries is also necessary, as there is no cash transaction in such cases.

In using this system it is better to have a large book of checks, which, if the farm business is of moderate size, the banker will gladly furnish with the checks numbered and the owner's name printed on them. A check book of this kind will generally last for a year - thus the advantage of having all the accounts in one book. This check book system as an aid to keeping financial accounts on the farm is very simple and will prove valuable to a large number of men whose business is adapted to it. - E. H. Thomson.

A COMPARISON OF SURVEY ESTIMATES WITH ACTUAL RECORDS ON ARKANSAS FARMS.

The figures used by the Office of Farm Management as a basis of calculating the labor requirements of different farm activities are, in the main, the averages of a large number of estimates by the farmers of a region. These estimates are secured by the so-called survey method in which a farm to farm canvass is made by a representative of the office. As a check on the accuracy of such data a few farmers in each region are induced to keep careful labor records.

Records kept daily by 29 farmers at Conway, Arkansas, in 1914 have been compared with estimates, previously made, with interesting results. Records kept on 410 acres of cotton showed a total of 9.8 days of man labor per acre compared with 10.14 days according to estimates. The horse labor per acre was 6.05 horse days, actually, and was estimated at 5.76 days. On 329 acres of corn, the records showed 4.78 man days per acre compared with 4.44 days by estimates. The horse labor per acre was 5.39 horse days according to records and 5.22 days according to estimates.

Another comparison made was between the actual performance in cotton picking and the estimates previously made for the same operation. The average day's work in picking cotton as obtained from the estimates of the 26 farmers who grew cotton on the aforementioned 29 farms was 138 pounds seed cotton per day whereas the actual performance of 14 of these farmers was 142 pounds per day for the entire season.

Using the figures obtained by actual records as the basis of comparison, it is found that the variation between records and estimates ranged from about three per cent to seven percent, or a difference so slight that one is safe in taking the estimates in place of the actual records for planning farm operations. - A. D. McNair.

TILLAGE METHODS WITH CORN.

The Office of Farm Management has undertaken the application of the survey method to determine what tillage practices are employed with the principal cultivated crops in the regions where these crops are most largely grown, and to determine, if possible, why these are employed. Such studies concerning the tillage practices with corn have just recently been completed. These studies were made in twenty-five selected regions, which covers, in a general way, all important corn growing sections of the country.

The subject of tillage of corn can properly be divided into two great parts. The first has to do with the preparation of the seed bed, and the second with the cultivation of the growing crop. These studies lead to the conclusion that both in the preparation of the seed bed and in intertillage, the prevailing conditions with reference to farm labor and farm capital are the principal fac-

tors in determining differences in practice. In the preparation of the seed bed, soil-type is also an important factor, while in inter-tillage the types of weeds to be dealt with have much to do with the prevailing practices.

The tillage problem seems to be far more an economic than an agronomic one. What the farmer wants to know about the preparation of the land, is what, under his conditions, is the cheapest way to make an adequate seed bed; what he wants to know about inter-tillage is what is the cheapest way of keeping weeds out of his growing crop. The tillage given corn in the various regions studied differs widely in method, yet but little in results which could not be attributed to other causes. The reason why greater variations in results are not shown for the different methods and amounts of tillage seems to be that, in the main, all practices studied were adequate in the regions where employed, both in making a seed bed and keeping down weeds. This is in line with previous investigations of the office, which showed that if weeds be eliminated the kind of inter-tillage given corn becomes a minor consideration. (See B. P. I. Bulletin 257.)

These recent studies further showed that the yield of corn was most largely governed by the fertility and physical condition of the soil, which factors in turn showed a close relation to the system of farming practiced as affecting amount of organic matter present. - H. R. Cates.

COMPARATIVE UTILIZATION OF LABOR ON TWO TYPES OF FARMS IN MADISON COUNTY, KENTUCKY.

One of the most interesting facts brought out in a recent analysis of farm organization in Madison County, Kentucky, is the relative efficiency of the utilization of labor and power on various groups of farms.

If the available days for field work were completely utilized in this section, each laborer on the farm would put in 201 days per year in productive work on farm crops. There have developed two distinct types of farms here, the tobacco-stock farm and the strictly stock farm. The tobacco-stock farm employs its labor productively on field crops 87 per cent of the available time, while the stock farm employs it but 70 per cent.

There is a still greater difference shown when these farms are compared on the basis of percentage of the work days utilized. The tobacco-stock farm utilizes 79.4 per cent of the available work days productively and the stock farms 57.8 per cent. The work stock are employed 32.4 per cent of the work days in the year on the tobacco-stock farms and 26 per cent on the stock farms.

Low efficiency in the utilization of labor and power means a correspondingly high charge per unit for these elements in the cost of production, which means lower farm profits unless this charge is offset by relatively higher value of products. - J. H. Arnold.

DISTRIBUTION OF LABOR IN SMALL HAYING CREWS IN THE EAST.

An efficient method of labor distribution is of great importance in hay making. Only a small percentage of farmers in the eastern half of this country who grow from 15 to 50 acres of hay employ a definite or efficient method.

This lack of method is due to several causes, aside from that of unfavorable weather. For instance, farmers who depend on securing extra hired help are not always able to secure it, and, under such circumstances, the crew will be short-handed and will have to get along the best it can. Some farmers are satisfied if the haying is finished in a week or ten days. Therefore, there is no incentive to use a method that will speed up the crew to its greatest possible efficiency. The two most important causes for lack of efficient methods are, first, the small acreage cut daily and, second, the practice of hauling from the field in the afternoon only.

This practice of hauling in the afternoon only keeps all of the crew busy in the afternoon, but quite often over half of the men are idle in the forenoon or must be supplied with some other farm work not connected with haying.

Let us consider the size of crew required and loss of time for three methods when small crews are used, the variations in method in this case being caused by the hay requiring different lengths of time, in the swath, for curing. These methods are as follows:

No. 1-Hay is cut in the forenoon and hauled in the afternoon.
No. 2-Hay is cut in the afternoon and hauled the next afternoon.
No. 3-Hay is cut in the morning and hauled the next afternoon.

We may assume, in order to compare the three methods, that the crew used for hauling will require the same number of men in each method, say three when a hay loader is used.

The mower in each case will be used about half a day and the rake somewhat less. The idle time after raking is finished will be about the same for each method, and is not counted in the table below.

Table Comparing Three Methods.

	When	Time in Swath	No. of Men Working		Unemployed Man Labor
Method	cut	(24-Hr. Day)	In A.M.	In P.M.	in Forenoon (Days).
No. 1	A.M.	1/4 day	1	4	1.5
No. 2	P.M.*	3/4 day	0	5	2.5
No. 3	A.M.	1 day	2	3	.5

Cut Late in the Afternoon.

Method No. 3 is by far the most efficient one, as it requires less men and there is less loss of time in the forenoon, while

the same amount of hay will be made as in the other two methods, which is about 6 acres. This method is is adapted to a fairly heavy yield containing considerable clover; hence the necessity of leaving it one day in the swath to cure.

Method No. 2 allows the hay to lay in the swath over night, and until the next noon, the rake starting after dinner. It requires five men who work only in the afternoon, one man mowing, one raking hay cut the day before, and three men hauling.

Method No. 1 is suitable to timothy hay or timothy with a light clover mixture. With straight timothy hay, this method can be used at the beginning of the season, but with a clover mixture can only be used successfully near the end of the haying season. Methods Nos. 1 and 2 require the use of the side-delivery rake, as the hauling crew can start to work after it has made one round.

These illustrations are given in order to show the importance of working out a method that will suit each individual farm and employ the least number of men with as little loss of time as possible, in order to do the desired amount of work. This presents only one small phase of the problem of curing hay, and there are an almost infinite number of detailed methods in each system of curing. The problem of deciding which system to use is one that requires considerable study by the hay grower. - H. B. McClure.

INTERPRETING FARM RECORDS.

Advice to keep farm records is being constantly reiterated through the many sources from which the farmer obtains new ideas. Little is written or spoken as to the vital question of their interpretation. Farm records must be correctly interpreted to be of value. Moreover they may prove a positive detriment to the farmer who interprets them wrongly and acts on his interpretation. One danger of misinterpretation arises from the fact that often the accounts with the individual farm enterprises, and with the farm as a whole, are not studied from the same point of view, or, are studied from a point of view that does not measure their true relation as agents of gain.

There are three modes of measuring the relative profitableness of farm businesses, involving respectively the finding of, (1) the farm income, (2) the farmer's labor income, and (3) the farm profit. The farm income is the amount left from the farm receipts after paying all the farm expenses; the labor income what is left after interest on the farm capital is deducted from the farm income; and the farm profit the balance remaining after a fair allowance for the labor of the farmer is deducted from the labor income. In other words, farm income is balance over farm expenditures, labor income is balance over expenditures and interest, and farm profit is balance over expenditures and interest and the farmer's own time.

Of these three, the labor income has been found to give the best index as to the net result of the year's work. It stands for what the farmer has produced by farming or putting capital to work in agriculture. Capital alone can earn interest, and all that the farmer can claim to have produced by his efforts is what he has made over and above what his capital would have earned if safely invested. It therefore seems plain that the most accurate point of view from which to study and interpret the farm records is their contribution to the labor income.

After study of the records, if any changes in the farm make-up are planned, all sides of the effect of such changes should be carefully worked out, and it must be borne in mind that sometimes those enterprises that yield small labor income may be very necessary to the farm economy. They may be the only methods by which the waste products, coarse roughage, etc., can be made to yield any income or help to maintain the fertility of the soil. These small yielding enterprisee again may give employment to labor and capital during otherwise idle seasons. Radical changes may have far reaching effects on the entire farm economy, through disturbing the relation the various enterprises bear to each other and to the farm as a whole.

It is therefore prudent to weigh carefully, and view the farm records from every side, before making radical changes in the farming system. Any desired change should be made gradually, for jumping at conclusions is poor business policy in farming. - J. S. Ball.